IN THE CLAIMS:

1. (Previously Presented) A metal halide lamp comprising an arc tube that includes:

a pair of electrode structures, each of which has an electrode at a tip;

a main tube part made of sintered polycrystalline alumina ceramic having magnesium oxide of 200 ppm or below, and containing a discharge space in which the electrodes of the electrode structures are located to oppose each other; and

a pair of thin tube parts that connect from the main tube part and are sealed by respective sealing members with the electrode structures inserted therein, wherein

$20 \leq WL \leq 50$, $EL/Di \geq 2.0$, and $0.5 \leq G \leq 1.5$ are satisfied, where tube wall loading of the arc tube is $WL(W/cm^2)$, a distance between the electrodes is EL(mm), an inner diameter of the main tube part is Di(mm), and an average crystal grain diameter of the sintered polycrystalline alumina ceramic is G(μm).

2. (Cancelled)

3. (Original) The metal halide lamp of Claim 1, wherein

the inner diameter Di(mm) of the main tube part satisfies $2.0 \leq Di \leq 10.0$.

4. (Cancelled)

5. (Original) The metal halide lamp of Claim 1, wherein

the polycrystalline alumina ceramic has transmittance of 94% or more.

6. (Previously Presented) A metal halide lamp comprising an arc tube that includes:

a pair of electrode structures, each of which has an electrode at a tip;

a main tube part made of sintered polycrystalline alumina ceramic having magnesium oxide in a range of 1 ppm to 200 ppm wherein a uniform grain dimension is provided, and containing a discharge space in which the electrodes of the electrode structures are located to oppose each other; and

a pair of thin tube parts that connect from the main tube part and are sealed by respective sealing members with the electrode structures inserted therein, wherein

$20 \leq WL \leq 50$, $EL/Di \geq 2.0$, and $0.5 \leq G \leq 1.5$ are satisfied, where tube wall loading of the arc tube is $WL(W/cm^2)$, a distance between the electrodes is EL(mm), an inner diameter of the main tube part is Di(mm), and an average crystal grain diameter of the sintered polycrystalline alumina ceramic is G(μm).

7. (Cancelled)

8. (Previously Presented) The metal halide lamp of Claim 6, wherein

the inner diameter Di(mm) of the main tube part satisfies $2.0 \leq Di \leq 10.0$.

9. (Previously Presented) The metal halide lamp of Claim 6, wherein

the polycrystalline alumina ceramic has transmittance of 94% or more.

10. (New) The metal halide lamp of Claim 1 wherein the average crystal grain diameter is measured, in the sintered polycrystalline alumina ceramic arc tube, by measuring a number of crystals per unit length of the arc tube extending in a direction between the electrodes and dividing the unit length by the number of crystals.

11. (New) The metal halide lamp of Claim 6 wherein the average crystal grain diameter is measured, in the sintered polycrystalline alumina ceramic arc tube, by measuring the number of crystals per unit length of the arc tube extending in a direction between the electrodes and dividing the unit length by the number of crystals.

12. (New) In a metal halide lamp having a pair of electrode structures mounted for providing electrodes, the improvement comprising;

an arc tube of a translucent polycrystalline alumina ceramic having magnesium oxide of 200 ppm or below, and containing a discharge space in which the electrodes of the electrode structures are located to oppose each other wherein the following equation is satisfied,

$$0.5 \leq G \leq 1.5$$

wherein an average crystal grain diameter in the translucent polycrystalline alumina ceramic arc tube is G(μm) and is calculated by measuring the number of crystals grains per unit length of the arc tube extending in a direction between the electrodes and dividing the unit length by the number of crystal grains.